

Proposed New Work Item Summary Sheet

1. Title of Proposal

This New Work Item Proposal creates three additional parts of ISO 15926 “Integration of life-cycle data for oil and gas production facilities”

Part 4 – Reference data (“Initial register content”)

Part 5 – Procedures for registration and maintenance of reference data (“Procedure standard”)

Part 6 – Scope and methodology for developing additional reference data (“Technical standard”)

2. Nominators:

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3. ISO TC184/SC4 Representatives/Project Leaders

For Part 4:

Project Leader/Editor:

For Part 5:

Project Leader/Editor:

For Part 6:

Project Leader/Editor:

Quality representative

For Parts 4, 5, and 6

4. Scope and Functional Requirements of the NWI

This New Work Item extends ISO 15926 by adding the Parts necessary to establish, maintain, and extend an ISO Register of reference data for oil and gas production facilities¹.

The architecture of ISO 15926 is illustrated in Figure 1 below².

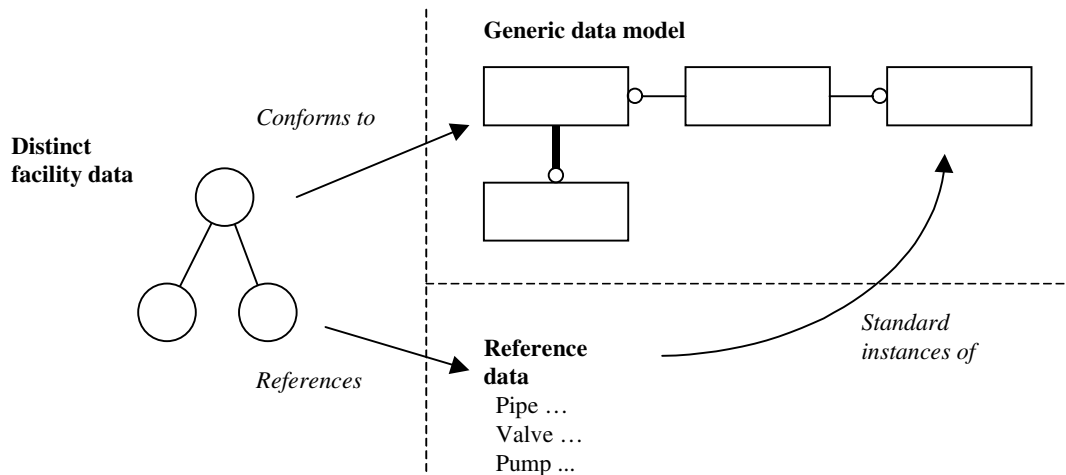


Figure 1 – ISO 15926 Architecture

The data that describes a particular facility is structured according to the generic data model defined by ISO 15926-2. Additional meaning within the data that describes a particular plant or facility, and across multiple sets of data describing different plants or facilities, is provided through reference data. Reference data consists of application object instances that represent abstractions that are commonly referred to in descriptions of oil and gas production facilities.

These abstractions and their common characteristics are represented once as instances of class, constraining the characteristics of the particular individual members

EXAMPLE A particular pipe may be identified as a member of the class “6 inch pipe”, thereby specifying the particular pipe’s dimensions to be within the range of possible dimensions specified for the class.

Information about particular items that conform, or are intended to conform, to standards or to standardized engineering practices is represented in a concise and accurate form, without duplication. The detailed classes that have been recognised in the information associated with oil and gas facilities are defined as reference data.

The classes used with the oil and gas facilities industry have not been fully determined. Recent work has established an initial set that will be expanded as more work is done. Advancing technologies will

¹ This Register is also intended to be applicable to related industry sectors such as process plant and power generation. A general extension of the scope of ISO 15926 to cover these sectors has been requested as part of the CD ballot on ISO 15926-1.

² This is repeated from ISO/CD 15926-1.

add even more. A register of standard reference classes is required, to record those already recognized and in use and allowing new ones to be added. This is shown in Figure 2 below.

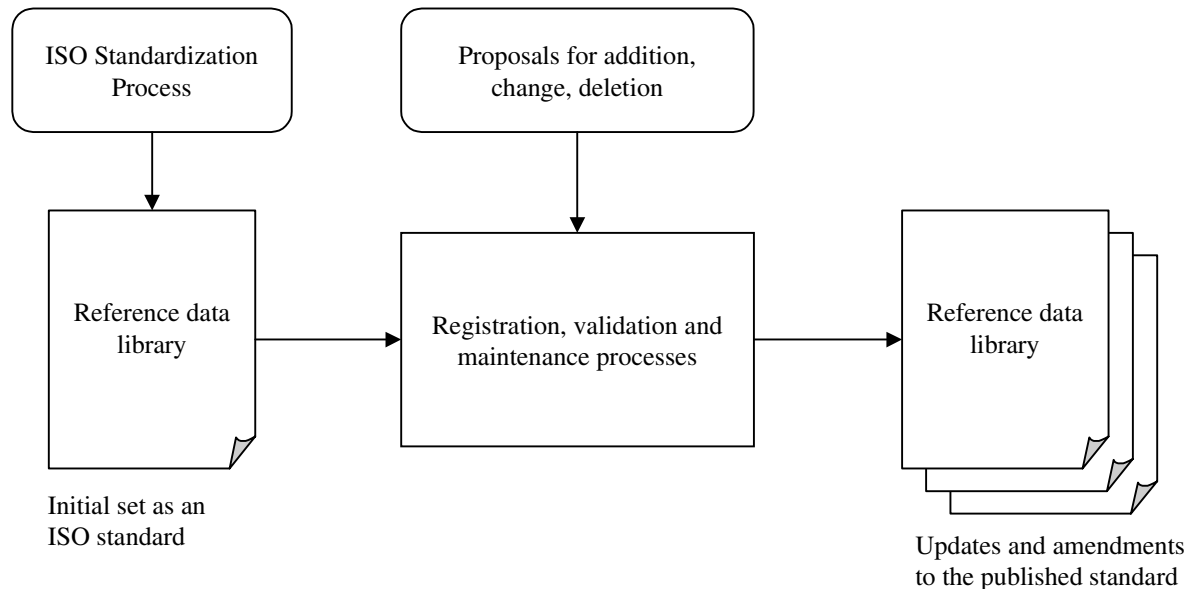


Figure 2 – Maintenance of reference data

The three proposed parts of ISO 15926 define:

- the initial content of the reference data library,
- procedures for maintaining and publishing reference data libraries, and
- methods for developing additional reference data.

The last two of these play the roles of technical standard and procedure standard respectively for an ISO Register of reference data, and supersede Part 3 of ISO 15926³.

The scopes of the three proposed parts are as follows.

Part 4 – Reference data

This part of ISO 15926 defines the initial set of standard reference data for oil and gas production facilities.

The following are outside the scope of this part of ISO 15926:

- Data requirements for additional reference data.

NOTE 1 These requirements are specified in ISO 15926-6.

- The procedures to be followed for registration and maintenance of additional reference data

³ Assuming that this NWIP is approved, the ISO 15926-3 project will be cancelled.

NOTE 2 These procedures are specified in ISO 15926-5.

Part 5 – Procedures for registration and maintenance of reference data

This part of ISO 15926 specifies the procedures to be followed for registration and maintenance of reference data. These procedures support extensions and revisions to published registers of reference data.

The following are within the scope of this part of ISO 15926:

- an overview of the processes of validating, registering and maintaining reference data libraries;
- the procedure for registering proposals for changes or additions to reference data libraries;
- the procedure for registering changes and updates to reference data libraries;
- the procedure for publishing reference data libraries.

The following are outside the scope of this part of ISO 15926:

- the content of reference data libraries;

NOTE 1 An initial reference data library for this International Standard is specified in ISO 15926-4.

- technical methods for developing additions to the content of reference data libraries.

NOTE 1 These methods are specified in ISO 15926-6.

Part 6 – Scope and methodology for developing additional reference data

This part of ISO 15926 specifies the scope and information required when defining additions to the ISO 15926 reference data library.

The following are within the scope of this part of ISO 15926:

- The information scope of additional reference data.
- The methodology for representing additional information in the reference data library
- The information requirements for defining additions to reference data.

The following are outside the scope of this part of ISO 15926:

- Methods or guidelines for using ISO 15926-2 to represent information other than reference information

5. Evidence of Industry need

Information concerning the engineering, construction and operation of process plants is created, used and modified by many different organizations throughout a facility's life. Economic, safety and environmental considerations demand that this information is available to owners and operators of plants, contractors, and regulatory bodies in a consistent, integrated form. This requirement can be satisfied

by specifications that prescribe the structure and meaning of data that is shared by organizations and disciplines involved in all stages of a facility's life-cycle.

The need to increase the cost efficiency of plants is leading to business practices that depend on the efficient integration and sharing of plant information in a computer processable form. These business practices include the following.

- Many users' needs now span more than one of the traditional information views. Safety and environment are two examples of this.
- Concurrent engineering requires design work to progress in parallel, with the state of the design being available electronically, in computer processable form, to other engineering, planning, purchasing and logistical activities.
- Significant cost savings are expected from standardization of component specifications. The information about these specifications is required in computer processable form for easy incorporation into facility designs and requirements.
- In the past, hand-over of plant design information was often restricted to design drawings and paper documents. Use of this information in managing the operation and modification of the plant was restricted to manual processes, or the information had to be redefined in a format suitable to the required application. Having the plant design and equipment information in computer processable form increases the efficiency and effectiveness of the operational phase of the plant.
- Accurate computer processable information about a plant's performance throughout its lifetime is of high value, for optimising future modifications to the facility and for designing new facilities on the basis of experience with existing facilities.

Much of the information that is created and used during the lifecycle of process industry facilities describes standard, reusable items – generic component and equipment classes; items described by national, international, or industry standards; commodity items; and individual manufacturers' products.

Most facility data fails to recognise common abstractions. The characteristics of a particular item, are rarely specified in any more detail than given by a manufacturers or industry standard, yet they are repeated (duplicated) for every particular item. They should be held for the type and inherited to type members. Leaving aside the confusion that results from regarding type constraints as characteristics of an individual, the failure to recognise this results in huge duplication in storing, validation, and reporting of data.

Where types are recognised, they are recreated within each project. So a project always defines a new set. Business partners then have to change software and data to accommodate the so-called project requirements.

The result is that for each major capital project considerable costs are associated with building a project-specific reference data library. The goal of the additional parts of ISO 15926 proposed by this NWIP is to make a standard reference data library available to all participants in the life cycle. This standard reference data library is designed to be used in conjunction with implementations of ISO 15926, and allows users to share and make reference a common, high quality collection of reference data elements. Availability of such a common library will reduce the costs of building and maintaining the reference data for a project by approximately 50%.

Early versions of a common reference data library developed by the POSC/CAESAR consortium (Norway), the USPI-NL consortium (The Netherlands) and the PISTEP consortium (UK) have been successfully deployed on a number of major capital asset projects. These consortia have been collaborating to merge and integrate their libraries – the result of this merger process forms the initial content of the reference data register proposed as ISO 15926-4. The experience of developing, validating, publishing and using reference data libraries in these consortia and projects has been codified as the basis for the other two parts of the proposed standard, which cover the technical and procedural operation of the register respectively.

6. Position in SC4 architecture

The position of the proposed reference data register standard within SC4 is illustrated in Figure 3 below.

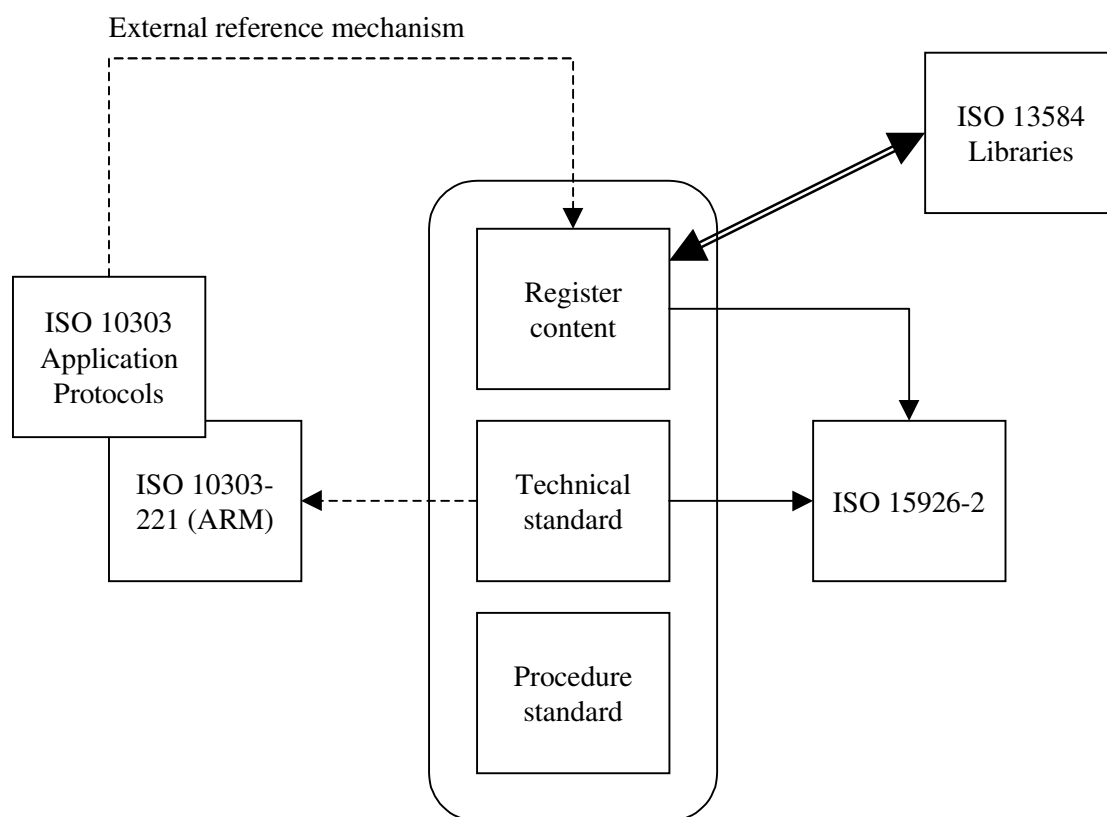


Figure 3 – Relationship to other SC4 standards

The Register (ISO 15926-4) uses ISO 15926-2 as the data model for the reference data library, and is intended to support the implementation of ISO 15926 in database and “engineering data warehouse” environments.

There is a similar link to ISO 10303-221, whose ARM is functionally equivalent to ISO 15926-2. The content of the reference data library will equally support implementations of ISO 10303-221 ARM.

The content of the reference data library can also support implementations of other ISO 10303 Application Protocols (based on their AIMS), through a suitable external referencing mechanism.

Potential links between the ISO 15926 register and ISO 13584 “PLIB” are as follows⁴:

- some of the content of the register can be published as one or more PLIB libraries (only content that corresponds to the PLIB model for library content);
- a PLIB library can make reference to the content of the register.

7. Overlap and relationships to existing SC4 work

See previous section.

8. Current participants and committed resources for developing the NWI

Considerable preparatory work on the proposed standards has already been undertaken in the context of EPISTLE by resources provided by the member companies of the POSC/CAESAR, USPI-NL and PISTEP consortia. These resources have prepared the Committee Draft documents that are circulated along with this NWIP.

The POSC/CAESAR and USPI-NL consortia will continue to provide resources to perform the roles of project leader and part editor for each of the three proposed parts, and will also undertake all necessary quality reviews. These resources are supported by experts from several countries (including the USA, Japan, The Netherlands, China, Germany, Norway and the UK), who are anticipated to participate in the development of these standards through technical reviews and contributions.

9. Schedule for delivering NWI

Activity	Target date(s)
Complete technical content of the Technical Standard, Procedure Standard and Initial Register Content	June 2000
Submit NWI proposals with accompanying documents for ballot	July 2000
— Parts 5 and 6 with accompanying CDs for ballot	
— Part 4 with accompanying Working Draft	
New Work Item (NWI) Proposal/CD ballot (four months)	July – October 2000
Discuss comments raised during NWI ballot	October 2000 (Charleston meeting and/or workshop to be held in November 2000)
CD ballot for Part 4	October 2000-January 2001

⁴ Details of these links are being investigated through dialogue between ISO TC184/SC4/WG2 Parts Library and ISO TC184/SC4/WG3 T20/T21 Process Plant/Oil & Gas.

Prepare ISO DIS documents (Parts 4, 5, and 6)	November 2000-April 2001
Quality reviews and signoffs	April 2001
Submit to SC4 Secretariat for DIS ballot	May 2001
DIS ballot (five months)	June-October 2001
Respond to DIS ballot issues and prepare International Standards	November-December 2001
Publication as International Standards	Q1 2002

10. Impact of NWI on ISO 15926 Parts 1 & 2

10.1 DIS schedule

The DIS document for Part 1 needs to refer to Parts 4, 5, and 6 that are proposed in the NWI and not refer to part 3 if the NWI is approved, or refer to the intent to develop Parts 4,5,6 and cancel 3 if the NWI is still being ballotted.

If we were to delay the DIS process until the outcome of the NWI is known, the DIS Parts 1 & 2 ballot would not start until November.

10.2 Parts 1 & 2 DIS Documents

The following identifies the changes that are necessary to reflect the standardization of the RDL as ISO 15926-4 (content), -5 (procedures), and -6 (technical). There should not be any normative references from -1 or -2 to the other parts.

10.3 Part 1

1. Add references to Parts -4, -5, and -6 to the Foreword. These would only be included in the DIS document if the new parts have been approved as NWIPs. Otherwise, a NOTE will have to be added stating the intent to add these parts, and to include the final referring text in the FDIS (if required) or IS text. Modify the Introduction (0.3) to reference -2, -4, -5 and -6 as appropriate, describing their roles with respect to the overall standard.
2. Scope statement (clause 1) - replace the second item in the first list by three items covering the scopes of -4, -5, and -6.
3. Add additional sentence(s) to NOTE 2 in clause 1, stating the life cycle support of the initial RDL in -4, and explaining its extensibility based on -5 and -6.
4. Delete the definition of "common model" in 3.6. Where this term is used elsewhere in the next, substitute "oil_and_gas_facilities_schema defined in ISO 15926-2"
5. Expand clause 4, adding one or more sentences to provide an overview of -4, -5, and -6.
6. Change the NOTE in clause 5.1 to reference -5 and -6.

7. 5.3 will need some rewording and some additional text to reflect the content of -5 and -6. In particular, the role of -6 in defining how additional reference data is formulated needs to be captured.
8. Remove or replace any outstanding references to Part 3, by reference to -5 or -6, as appropriate.

10.4 Part 2

Only two changes are necessary:

1. Refer to the new parts in the Forward, depending on the status of the NWI.
2. Add references the Bibliography.